FAA AVIATION NEWS

OCTOBER 1969

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COVER

With the opening of 16 new off airway routes for area navigation, pilots now have more sky to fly through. For route locations and what they mean, see page 3.

FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION / **FEDERAL AVIATION ADMINISTRATION** VOL. 8, NO. 10

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PHANTOM AIRWAYS

First Official Area Navigation Routes Now Operating

The available controlled airspace expanded a measurable degree on October 1, 1969, when 16 new "off-airway" navigational routes were established in 10 widely scattered regions in the United States.

Established on an interim basis, the new routes will enhance safety by reducing congestion along several of the nation's most heavily traveled airways.

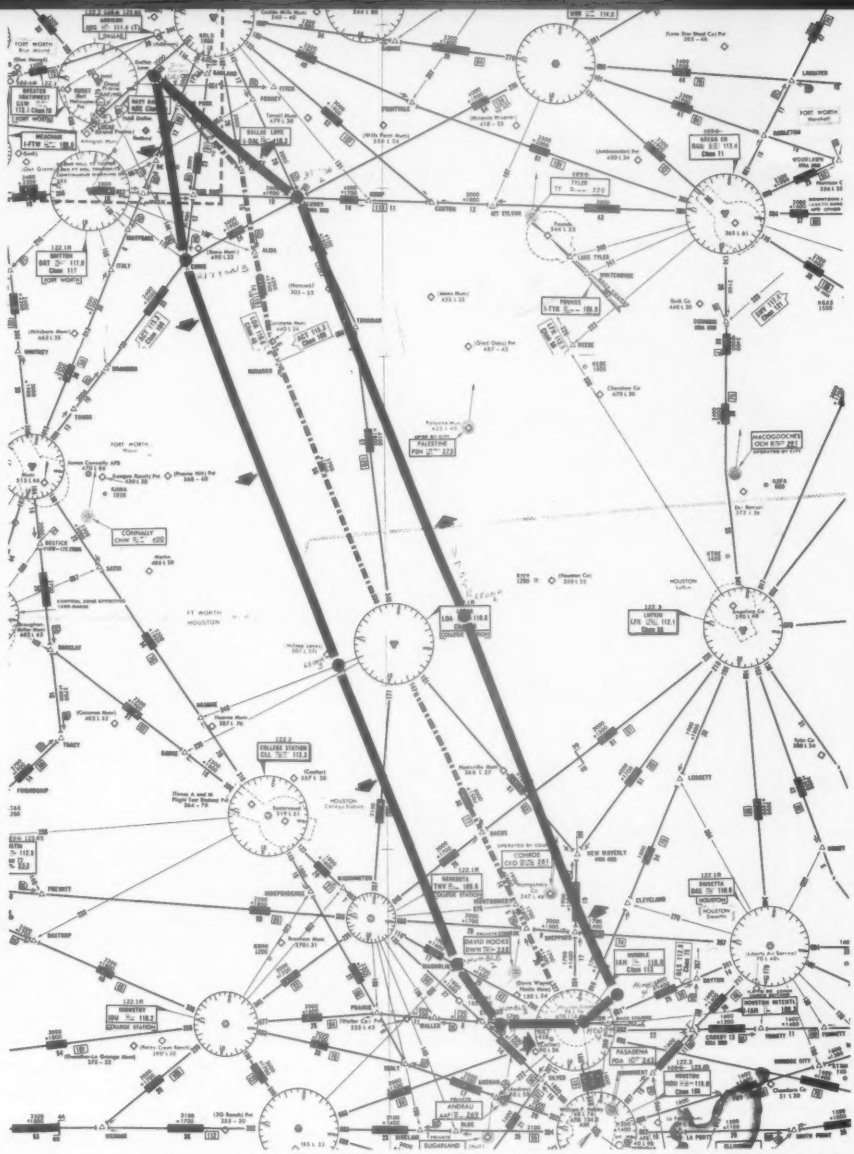
The new routes appeared for the first time in Part 3A of the September 4 issue of the Airman's Information Manual, which was amended on September 18 to incorporate minor changes. Qualified pilots flying aircraft outfitted with FAA-approved area navigation equipment now have a choice of routes between:

- Los Angeles to Chicago (two routes).
- Chicago to New York (two routes).
- Kansas City, Mo. to Minneapolis (two routes).
- Houston to Dallas (four routes).
- San Francisco to Chicago (two routes).
- Atlanta to Pinehurst, N. C. (two routes).
- Knoxville, Tenn. to Atlanta (two routes).

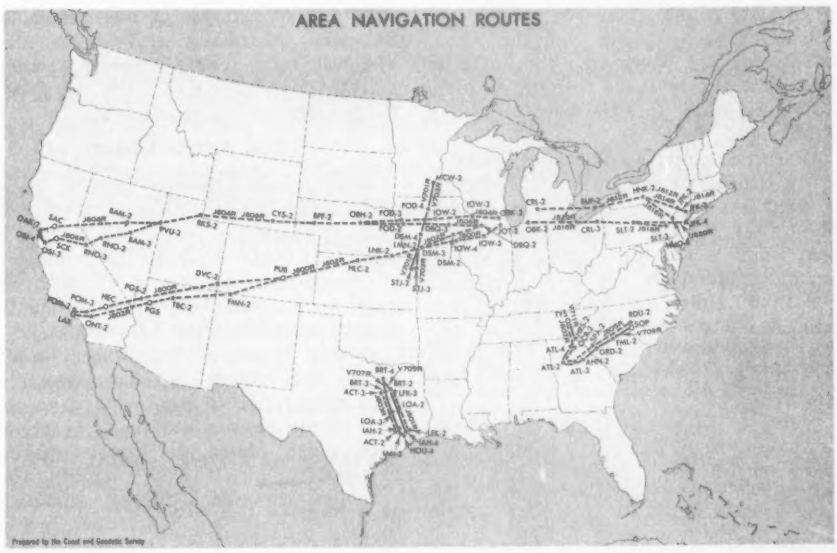
In order to take advantage of the new routes, however, pilots must be trained in the use of, and have aboard, special electronic navigation equipment which meets FAA standards. These are detailed in newly published Advisory Circular AC 90-45, "Approval of Area Navigation Systems for Use in the National Airspace."

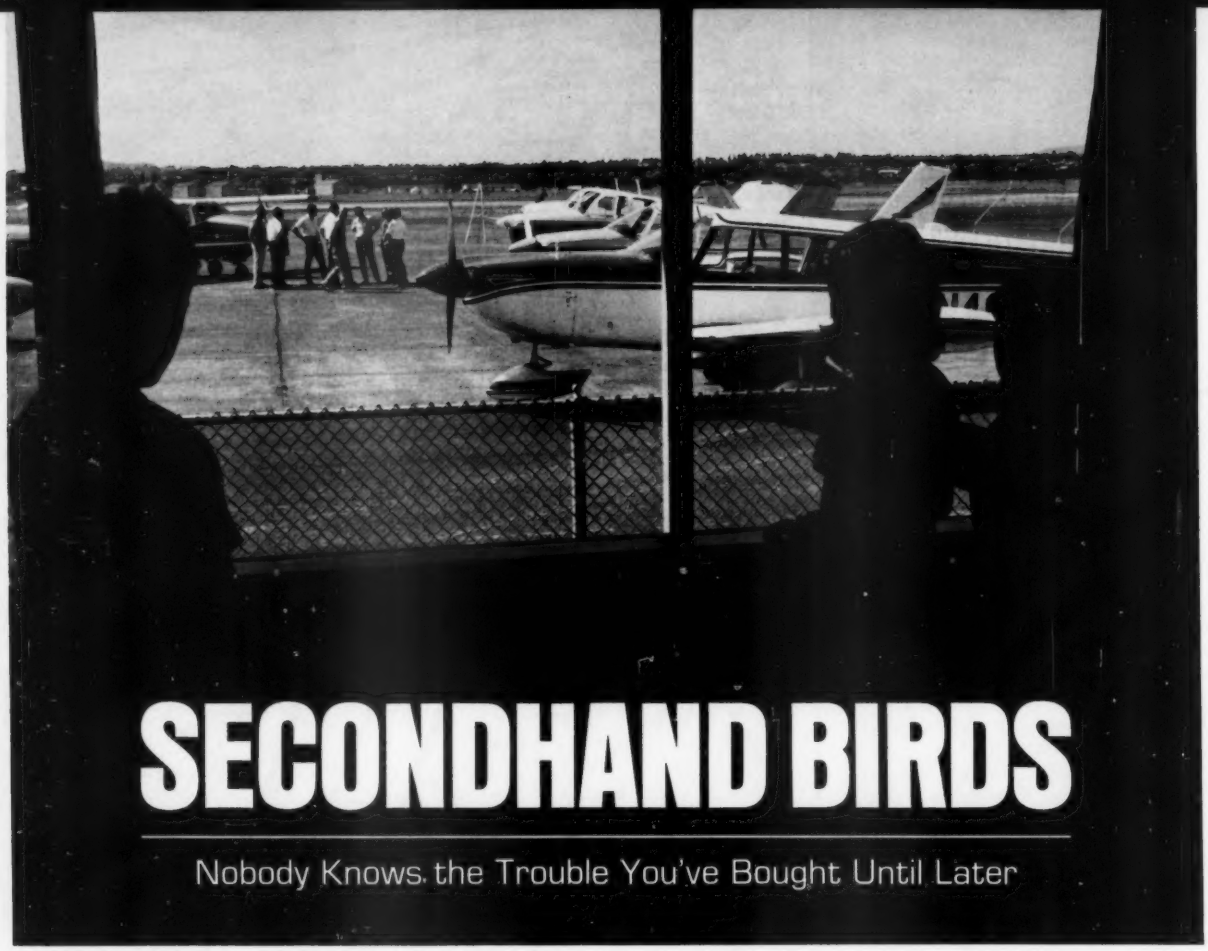
Simply stated, the area navigation (RNAV) system most general aviation pilots are likeliest to encounter consists of an airborne course indicator in the cockpit, a VOR/DME way point selector, and a computer. Other RNAV equipment that can be used in the new route system include doppler radar or inertial systems. The systems range in price from $5,000 to $90,000.

Through the use of RNAV equipment, new airways may be established on courses that need not originate or terminate with a VOR. The course is laid out along "phantom" way points determined by radial and distance from existing VORTACs. (See "From Checkpoints to Way Points," FAA AVIATION NEWS, July 1969.) ■



Parallel area navigation routes (dark lines) linking Houston and Dallas flank low altitude airway V477 (broken line). Area navigation routes shown are one-way, with way points indicated by heavy black dots.





SECONDHAND BIRDS

Nobody Knows the Trouble You've Bought Until Later

Good used airplanes are in plentiful supply but it takes knowledge and patience to pick the right one.

Buying an aircraft second-hand (or even third, fourth or fifth-hand) can be an economic transaction leading to happy flying—or it can be the beginning of a costly, frustrating experience.

Unlike the used car buyer, the pilot shopping for a used plane need not be misled by a high-gloss wax finish or the unsupported word of the seller. The aircraft records which must remain with the plane, can provide the buyer with the complete mechanical history of the aircraft. As such, it is a good guide for a thorough inspection of the plane.

All entries citing modifications, installation or removal of equipment, or accidents, are signposts pointing to further investigation. But it takes a mechanic to read them, which is why the purchase of a used aircraft generally is not a do-it-yourself proposition. Unless the buyer himself is a qualified aviation mechanic, prudence dictates that he hire a certificated A&P to inspect the aircraft before any papers are signed.

Failure to do so can be not only costly, but also dangerous. Recently, a group of physicians pooled their resources and paid $50,000 for a light twin with less than 300 hours on the airframe and engines. To all appearances, the plane was in factory-new condition, and the doctors had every right to expect hundreds of hours of trouble-free flying efficiency and pleasure.

This was not to be, however. Almost from the moment of taking possession of their dream aircraft, one trouble followed another, the principal one being a recurrent vapor lock in the fuel system. The aircraft's chief appeal, said one of the doctors, was the safety inherent in a two-engine plane. The balky fuel system, however, cancelled out this extra margin of safety. In a word, the aircraft was dangerous to fly.

Fuel System Altered

After several expensive stays in various maintenance hangars where every effort was made to locate and correct the trouble, the plane was finally flown to the manufacturer's home plant. Here it was given a thorough, inch-by-inch inspection of the fuel system, from filler caps to cylinders.

It was discovered that sometime after leaving the factory, the fuel system had been altered without approval and *no mention of the change was made in the log book*. Once located, the trouble was easy to correct.

In this case even a diligent examination of the log book would not have revealed potential trouble, but a lengthy test flight during which the fuel system could have been operated through its full range might have raised some suspicions.

The doctors made another mistake that cost them money—the airplane they had bought was too sophisticated for the maintenance facilities in their area. As a result it had to be flown 400 miles for anything but routine service.

Not only the area where the plane is to be used, but also the region where it has seen service, is an important consideration. The airfield where an aircraft is offered for sale is not necessarily the same region where it was hangared or tied down. This can be of importance if the plane was operated for any length of time in coastal or industrial areas where the risk of corrosion is high. Examination of the log book may disclose this information.

The external appearance of the aircraft and the condition of the cabin offer valuable clues as to its overall airworthiness. In fact, general aircraft cleanliness is among the first items on the FAA checklist for the annual inspection. A clean airplane, inside and out, indicates pride and attention to detail; it is a reasonable assumption that the owner of a clean airplane is equally meticulous about its mechanical condition.

Metal fatigue can be expected in older

aircraft, the most obvious tip-off being small aluminum patches on engine cowling and propeller spinner, or tiny holes drilled to stop cracks elsewhere on the aluminum skin. Such patches or cracks could be the result of a rough-running engine or a propeller out of balance.

The true condition of aircraft fabric, and consequently the amount of life left in the covering, can only be determined by the use of a fabric gauge—rapping it with the knuckles is akin to kicking an automobile's tires and tells nothing at all. (See *Rag Wings*, FAA AVIATION NEWS, May 1969.) In some cases, the cost of recovering an aircraft is greater than the asking price of the plane, including the engine.

Fabric strength testing should be done on surfaces exposed to direct sunlight, and on the darkest areas, such as registry numbers, since they absorb heat—that speeds up fabric aging.

Looks Are Revealing

A great deal can be learned about an engine from its external appearance. Oil leakage or seepage could indicate that all is not well with seals and gaskets. It could also mean a cracked cylinder or crankcase. Chipped cooling fins on the cylinders, or bent or missing baffle plates are clues that the engine has been operating at temperatures higher than recommended by the manufacturer.

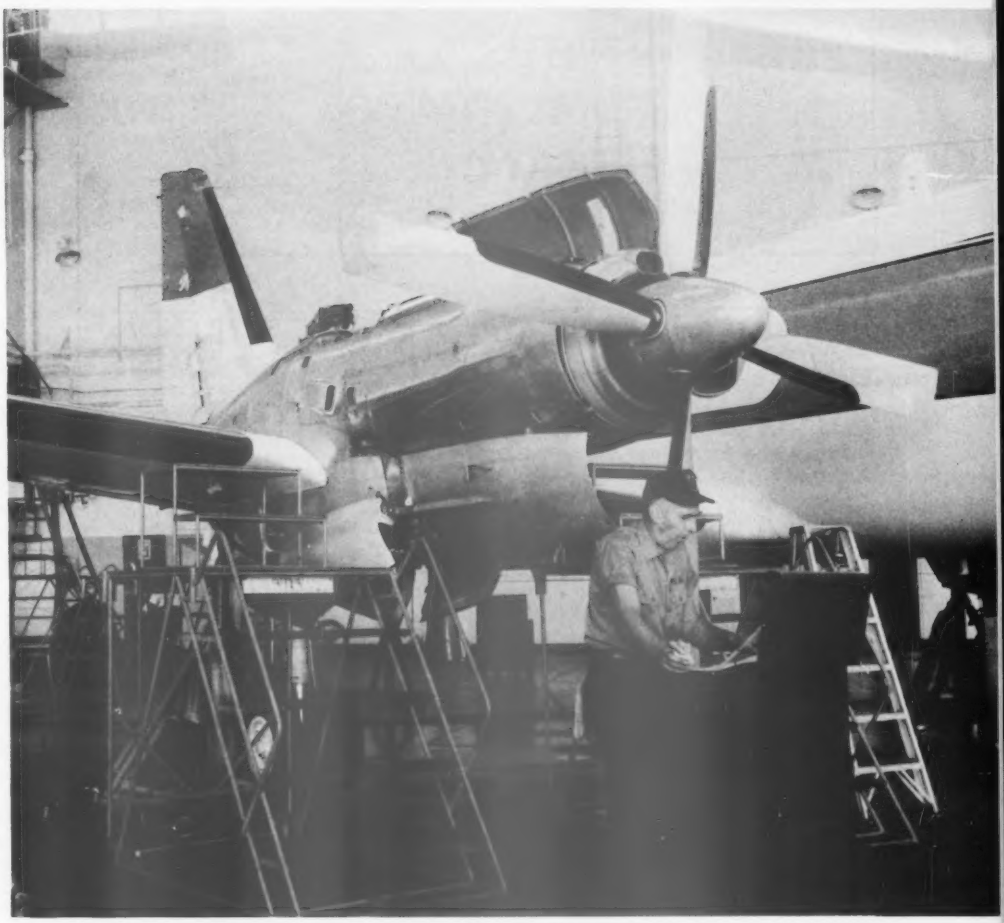
The engine log itself is important since it should reflect any mechanical difficulties, periodic inspections and the number of times the engine has received a major overhaul. Although a record of a major overhaul looks fine, it is the number of times that the engine has been torn down that is important.

While a seller might boost his asking price from $200 to $500 on the strength of the record showing a recent "major," the next time the engine is due for a complete overhaul might be its last—at a cost of $2,000-plus for a new engine.

Although the log book and other airplane records are important in evaluating the condition and airworthiness of the airplane, it is wise to remember they are only a guide. A recently completed 100-hour or periodic inspection only means that the airplane was found safe for flight at the *time of the inspection*. The very next flight following an inspection might result in damage not reflected in the record.

Before any money changes hands the buyer should have absolute assurance, in writing, that the airplane has a clear title. His dream plane might not turn out to be such a bargain if later he discovers it is encumbered with liens, chattel mortgages or other unsatisfied claims. Do not depend on the dealer to take care of this part of the transaction.

A title search can be made by any individual, but specialized title-search companies and attorneys can make the process a simple routine matter. Depending on complexity, title search fees range from as little as $5 to as much as $20, and can take from a few hours to a day. Special rates are usually available to members of pilots' groups.



Buyers of large used aircraft have their own A&Ps give the plane the once-over, a money-saving idea that also has application for the general aviation pilot of modest means.

Title Search

A list of title-search companies is available from FAA, Aircraft Registration Branch, AC-250, P. O. Box 25082, Oklahoma City, Okla. 73125.

Assuming that the airplane is exactly what the buyer wants, has no mechanical defects and has a clear title, what other documents should he get with the plane?

- Bill of sale
- Certificate of airworthiness
- All aircraft and engine records
- Equipment list
- Weight and balance data
- Maintenance manual, service letters, bulletins, etc.
- Airplane flight manual or operating limitations

Special documentation and rules apply to the purchase of amateur-built or experimental aircraft, as well as to surplus military planes. To avoid disappointment and loss of time and money, purchasers of this category should contact the nearest General Aviation District Office for specific instructions *before* signing any papers.

Before the purchased aircraft can be flown, the new owner must have a Certificate of Registration (FAA Form 8050). This is in three parts: Part 1 is the Application for Registration; Part 2 is the Bill of Sale; and Part 3 is the Certificate of Aircraft Registration. The Form 8050 is sent to the FAA Registration Branch, Oklahoma City. The yellow copy of Part 1 should be retained in the aircraft until FAA returns Part 3, the Certificate of Registration.

There are many good buys to be had among the thousands of used aircraft available. Getting exactly what you want, at the price you want to pay, is subject to the rules governing any transaction. But you can control the risk somewhat if you make a realistic appraisal of what you need the plane for; how much you can afford to spend; your skill as a pilot; and maintenance and support services available. Thought should also be given to eventual resale as skill is upgraded, or requirements change. ■

STATUS of The FEDERAL AVIATION REGULATIONS

As of October 1, 1969

The Federal Aviation Administration began consolidating and issuing its Federal Aviation Regulations in volume form in June of this year. Volumes I, II, V, VI and X are now available. As each group of FARs is collected into a volume, the FARs making up the volume, and all subsequent changes, will no longer be sold individually. All FARs in each volume will be up to date at the time the volume is offered for sale, and changes will be mailed to the subscribers automatically.

As each volume is issued, an availability notice will be mailed to all persons now receiving the FARs, and the news will also be reported in FAA AVIATION NEWS. Distribution of the volumes will be made by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, who will set the price for each volume. ■

FAR PART OR VOLUME NO.	TITLE	PRICE
Vol. I, Part 1	Definitions and Abbreviations	$1.50 + 50¢ foreign mailing
Vol. II contains:		$8.00 + $2.00 foreign mailing
Part 11	General Rule-making Procedures	
Part 13	Enforcement Procedures	
Part 15	Nondiscrimination in Federally Aissisted Programs of the FAA	
Part 21	Certification Procedures for Products and Parts	
Part 37	Technical Standard Order Authorizations	
Part 39	Airworthiness Directives	
Part 45	Identification and Registration Marking	
Part 47	Aircraft Registration	
Part 49	Recording of Aircraft Titles and Security Documents	
Part 183	Representatives of the Administrator	
Part 185	Testimony by Employees and Production of Records in Legal Proceedings	
Part 187	Fees	
Part 189	Use of Federal Aviation Administration Communications System	
Vol. V contains:		$3.00 + 75¢ foreign mailing
Part 43	Maintenance, Preventive Maintenance, Rebuilding and Alteration	
Part 145	Repair Stations	
Part 149	Parachute Lofts	
Vol. VI contains:		$5.50 + $1.25 foreign mailing
Part 91	General Operating and Flight Rules	
Part 93	Special Air Traffic Rules and Airport Traffic Patterns	
Part 99	Security Control of Air Traffic	
Part 101	Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons	
Part 103	Transportation of Dangerous Articles and Magnetized Materials	
Part 105	Parachute Jumping	
Vol. X contains:		$4.50 + $1.25 foreign mailing
Part 151	Federal Aid to Airports	
Part 153	Acquisition of U. S. Land for Public Airports	
Part 155	Release of Airport Property from Surplus Property Restrictions	
Part 159	National Capital Airports	
Part 167	Annette Island, Alaska, Airport	

FAR PART OR VOLUME NO.	TITLE	PRICE	CHANGES
The FAR Parts listed below have not yet been assembled into volumes:			
Part 23	Airworthiness Standards: Normal, Utility and Acrobatic Category Airplanes	1.25	6
Part 25	Airworthiness Standards: Transport Category Airplanes	2.25	19
Part 27	Airworthiness Standards: Normal Category Rotorcraft	.70	3
Part 29	Airworthiness Standards: Transport Category Rotorcraft	2.00	4
Part 31	Airworthiness Standards: Manned Free Balloons	.20	2
Part 33	Airworthiness Standards: Aircraft Engines	.40	3
Part 35	Airworthiness Standards: Propellers	.30	2
Part 61	Certification: Pilots and Flight Instructors	1.25	29
Part 63	Certification: Flight Crewmembers Other Than Pilots	.35	10
Part 65	Certification: Airmen Other Than Flight Crewmembers	.35	12
Part 67	Medical Standards and Certification	.25	7
*Part 71	Designation of Federal Airways, Controlled Airspace and Reporting Points	.20	5
*Part 73	Special Use Airspace	.20	1
*Part 75	Establishment of Jet Routes	.20	2
Part 77	Objects Affecting Navigable Airspace	.35	7
**Part 95	IFR Altitudes	.25	—
**Part 97	Standard Instrument Approach Procedures	.20	1
Part 121	Certification and Operations: Air Carriers and Commercial Operators of Large Aircraft	2.00	32
Part 123	Certification and Operations: Air Travel Clubs Using Large Airplanes	.25	1
Part 127	Certification and Operations of Scheduled Air Carriers with Helicopters	.35	10
Part 129	Operations of Foreign Air Carriers	.20	4
Part 133	Rotorcraft External-Load Operations	.20	3
Part 135	Air Taxi Operators and Commercial Operators of Small Aircraft	.35	5
Part 137	Agricultural Aircraft Operations	.25	3
Part 141	Pilot Schools	.35	7
Part 143	Ground Instructors	.25	3
Part 147	Mechanic Schools	.20	1
Part 157	Notice of Construction, Alteration, Activation and Deactivation of Airports	.20	1
Part 161	(Deleted effective 6/1/66)	—	—
Part 163	(Deleted effective 7/1/65)	—	—
Part 171	Non-Federal Navigation Facilities	.25	4
Part 181	(Rescinded 4/1/67)	—	—

* Changes to individual airspace designations and airways descriptions, individual restricted areas and individual jet route descriptions are not included in the basic Parts 71, 73 and 75, respectively, because of their length and complexity. Such changes are published in the Federal Register and are included on appropriate aeronautical charts.

** Due to the complexity, length, and frequency of issuance, airworthiness directives, enroute IFR altitudes and instrument approach procedures are published in the Federal Register and are not included in basic Parts 39, 95 and 97. In addition, enroute IFR altitudes and instrument approach procedures are published in the Airman's Information Manual, and are depicted on aeronautical charts.

Helping Hands

. It is a wise pilot who is willing to acknowledge his own slipups.

AN El Paso pilot approaching Fort Worth's Meacham Field on a special VFR clearance in marginal weather conditions appeared to have difficulty following the tower's instructions. Radio communications with the tower indicated that the pilot was not instrument rated, had not filed a flight plan, and had not kept himself informed of weather conditions enroute. With luck, and with careful coaching on the part of Air Traffic Control, he was able to bring his aircraft in for a safe landing. But how long would this kind of luck hold out?

A few days later the pilot was visited at his home field in El Paso by an accident prevention specialist from FAA's General Aviation District Office. The latter chatted with the pilot on such subjects as the danger of losing the natural horizon during flight in poor visibility conditions, the hazard of obstructions at low altitude, and the importance of filing a flight plan and making a thorough check of the weather before takeoff and en route. The conversation was friendly, and when the FAA inspector left the pilot realized that his style of flying carried a built-in risk. He resolved to check the weather more carefully and decided to start instrument training immediately.

The meeting of these two persons—the accident prevention specialist and the pilot—was made possible by a SIR (Safety Improvement Report) submitted by a concerned pilot and a controller, both of whom had observed the erring airman's approach to Meacham. The Safety Improvement Report is one of the most effective tools developed in the Accident Prevention Program which FAA is currently trying out in the Central and Southwest Regions.

The Accident Prevention Program is headed in each general aviation district in the two regions by an FAA inspector especially qualified to act as an accident prevention specialist. His job is to forestall accidents by friendly counseling with pilots whose flying has shown an unfamiliarity with established flight procedures, such as his entering the traffic pattern at an uncontrolled airport at the wrong altitude, or not formally closing a flight plan.

A principal use of the SIR is to permit concerned pilots and other interested persons to point out unsafe conditions or defects in their flight environment—including equipment, navigational facilities, airports, and the behavior of fellow pilots. It is obviously easier to change a fellow pilot's technique by this indirect approach than by direct, however well-intentioned, criticism.

Every report is investigated and analyzed by the specialist, who takes action or in some cases refers the problem to more appropriate authorities. The anonymity of the person submitting the report is preserved, and he is informed by letter as to the efforts undertaken to relieve the problem. The emphasis is on corrective rather than punitive action.

In the Southwest Region, during the first year of the test Accident Prevention Program, more than 3,000 SIRs were submitted by pilots, airport operators, instructors, and the concerned public. Representative of the actions taken are:

- *Removal, marking, or burying of utility wires in runway approaches.*
- *Installation of warning lights on communications towers and other obstructions to safe aerial navigation.*
- *Repair of runways, taxiways, ramps, and airport lighting.*
- *Establishing UNICOM procedures at uncontrolled airports.*
- *Installation of new windsocks and workable wind tees.*
- *Improved markings on air navigation charts.*
- *Counseling flight instructors regarding deficient student pilot actions.*
- *Informing aircraft operators of unsafe procedures and actions by employees.*

SIRs have already served to bring about rule and procedure changes. After several SIRs were received suggesting better use of UNICOM at uncontrolled airports, the procedure was established to provide 122.8 frequency for use by air carriers approaching and leaving any uncontrolled airport. (Prior to this time FCC rules did not permit air carriers to use 122.8.) General aviation pilots were encouraged to make better use of UNICOM to announce their intentions for landing and takeoff, adding greatly to the safety of aircraft using the airspace.

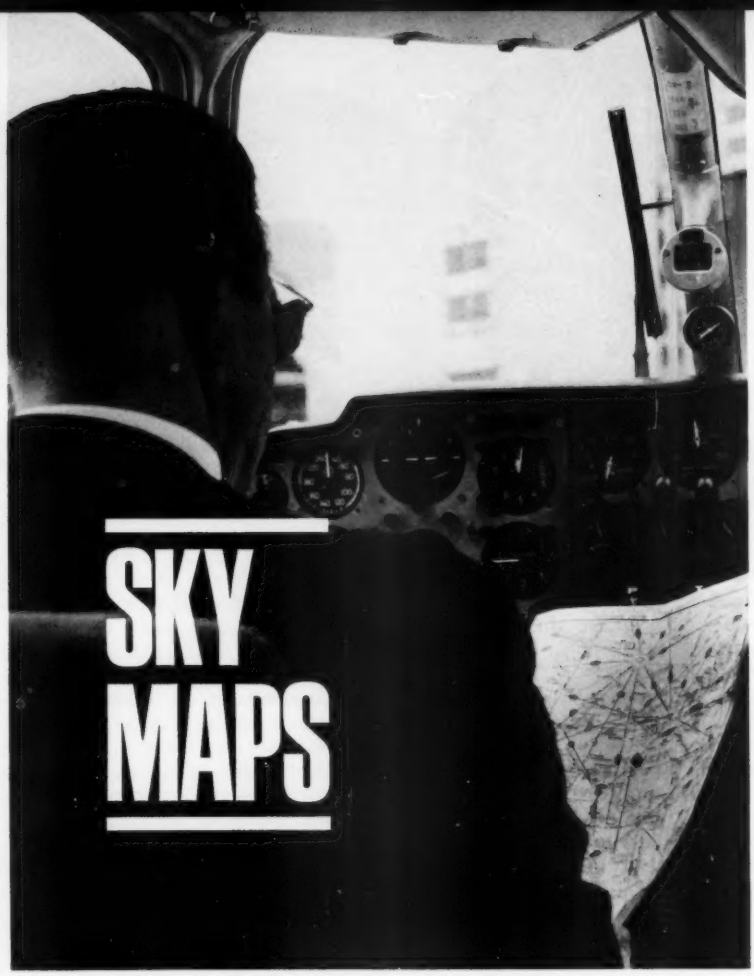
Another significant Safety Improvement Report was filed after a pilot was observed using an abandoned airport in a west Texas city. In talking with the pilot, the local accident prevention specialist found the pilot did not understand the markings which indicated the airport was closed. After counseling the pilot and giving him the information in AC-150/5340.1B and 150/5340.7A pertaining to runway markings, the FAA specialist went further. He distributed the same information to all ground and pilot schools in the area and recommended that the information be included in all training programs. The FAA Aeronautical Center was informed of his action and requested that questions on markings be included in pilot written examinations.

Safety Improvement Reports have prompted airport managers to take action to improve damaged runway surfaces which were becoming hazardous. At a Louisiana airport, an executive jet pilot reported blowing a tire on takeoff after passing over a rough taxiway. His SIR caused a NOTAM on the surface condition to be issued and repairs were started immediately.

Important corrections have been made on aeronautical charts where newly commissioned or relocated airports appeared in error in relation to known landmarks. Potentially hazardous towers sometimes do not appear on charts. Omissions and errors are brought to the attention of the Coast and Geodetic Survey.

Southwest Regional Director Henry L. Newman is hopeful that the Accident Prevention Program will reduce fatal accidents in his region by 20 per cent in 1969. He considers the Safety Improvement Report an extremely effective means of bringing about closer cooperation among FAA, airport management and the flying public.

George Burlage



SKY MAPS

Aeronautical charts and road maps have this much in common: only about one person in 100 can refold one to its original shape after use, and hardly anyone can do it one-handed. Because charts are sometimes a bother to handle, some VFR pilots make a habit of doing without them whenever possible.

Nevertheless, charts are the least expensive and most indispensable NAVAID available. The pilot who restricts himself to an occasional glance at a sectional is missing out on a wealth of flight assistance.

There are no less than eight basic aeronautical charts published by the U.S. Coast and Geodetic Survey for flight navigation as well as several others for special aeronautical purposes. They are prepared from specifications developed by the Inter-Agency Air Cartographic Committee (IACC), chaired by FAA.

Three of the eight charts are designed for flight by Visual Flight Rules and four are for flight by instruments, both overland and overwater. But there are occasions when VFR charts are useful in support of IFR flights and vice versa.

For local VFR flying, the sectional chart is all a pilot really needs. However, for a cross-country flight of any sizeable distance, the VFR/IFR Planning Chart is the first thing to consult.

The planning chart should be studied on a wall or a large table. Each chart which covers either the eastern or western half of the United States, is 40″ x 54″; opening one in a cockpit is not advised, even in a 707.

An Overall Appraisal

Planning charts allow one to make a quick overall appraisal of the terrain to be flown over. If flying down the East Coast to Miami, for example, the single-engine pilot can decide just how much water he wishes to place between his aircraft and *terra firma*. He can note the blocks of reserved airspace, and the perimeter of the coastal defense zone. On the other hand, if he is flying west from Kansas, transiting the Rocky Mountains, he can quickly determine where the service ceiling or cabin oxygen availability of his aircraft will permit him to fly safely.

The VFR Planning Chart shows airfields, VORs, VORTACs, Reserved Airspace, ADIZ, Time Zones and spot elevations. It also indicates the appropriate sectional chart for each locality, but it is free of the detailed information presented in sectionals. Major land and water forms, and major cities are shown, but little more than this.

The IFR Planning Chart, which is printed on the reverse side of the VFR Planning Chart, essentially presents radio navigational information, including all types of radio beacons, aids to navigation, victor airways, fix points, oceanic and military routes, mileage, etc. No physical land forms, elevations or cities are shown.

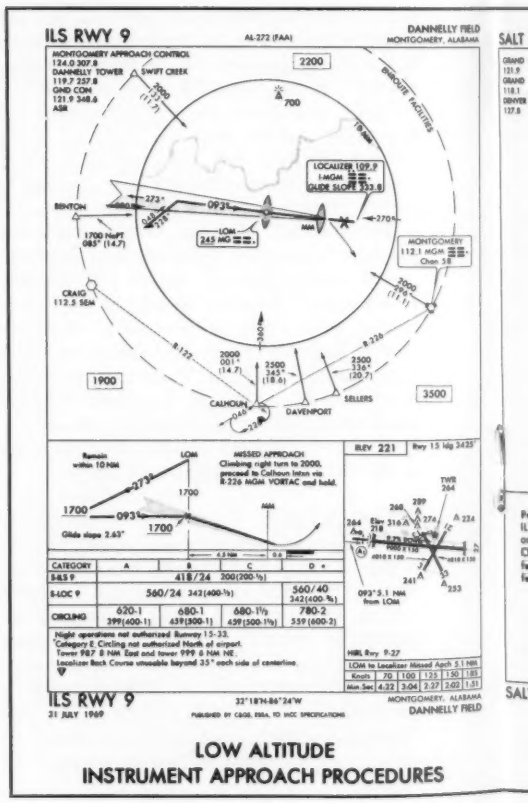
Once the general plan of flight is decided, the next choice of charts depends on whether the pilot wishes to fly VFR or IFR. There are two basic VFR charts—the Sectionals and the World Aeronautical Charts (WACs).

If the pilot is flying a low-to-medium speed aircraft (maximum air speed about 150 mph) and cruising at around 6,000 feet, he will probably choose the Sectional Chart. At this speed and altitude range, he will be able to identify the area he is over flying by reference to the ground environment, including contours and elevations that are shown on the sectionals through a system of gradient tints and shaded relief. He will also be able to locate any of the various radio NAVAIDs on his route.

The aeronautical overprint includes detailed information on controlled and restricted airspace, airports, radio aids to navigation, and obstructions.

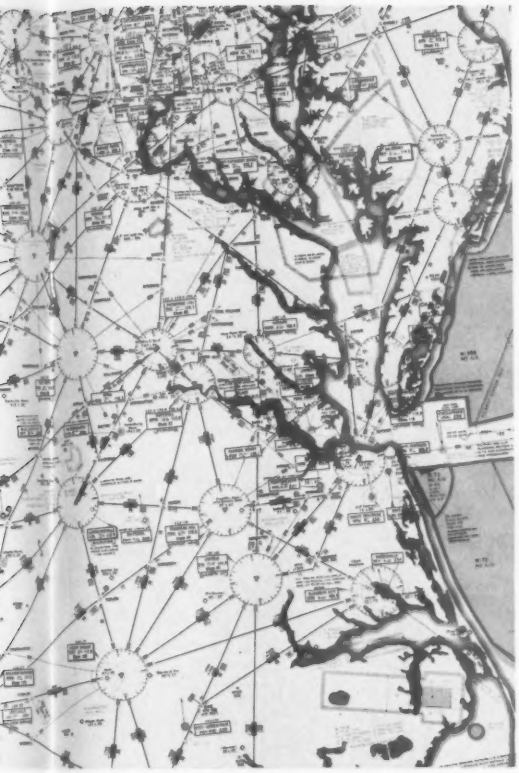
If his aircraft is a high performance one (cruising from about 200-250 mph) and he wishes to fly at a higher altitude, he might prefer to use the WAC chart, a smaller scale version which omits certain selected topographical data that would tend to clutter the chart, and would not be visible at higher altitudes; and certain NAVAIDS that would not be used in high speed flight.

If the pilot is instrument rated, he may

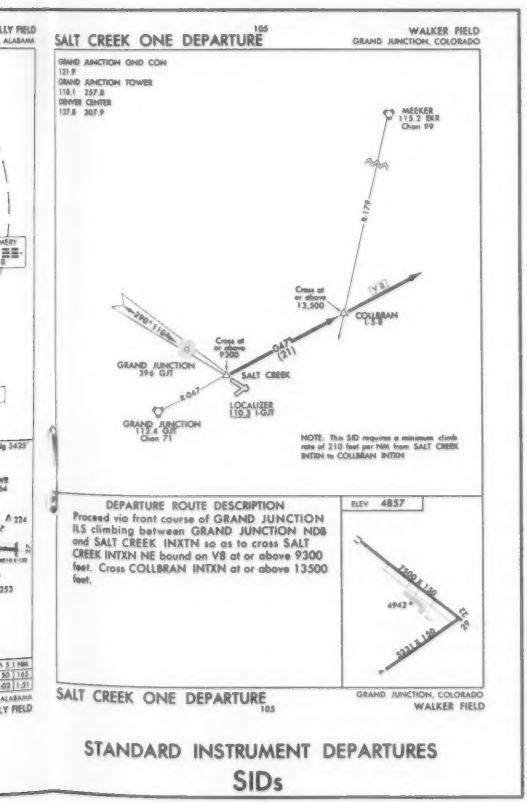


LOW ALTITUDE INSTRUMENT APPROACH PROCEDURES

Enroute Low Alt
but has a wealth



ute Low Altitude Chart has no topographical information has a wealth of IFR flight data for navigation and control.



STANDARD INSTRUMENT DEPARTURES
SIDs

elect to make an instrument flight. After an overall look at the IFR Planning Chart, he will turn to one of four Instrument Navigation Charts. His selection will depend on the proposed altitude of flight and whether or not he will fly over water.

Instrument Navigation Charts contain almost no topographical detail. They show all navigation aids and their frequencies, restricted airspace, prescribed minimum altitudes of flight between NAVAIDs, a mapping of the nation's airways, and coastal shorelines.

The *Enroute Low Altitude Chart* is suitable for flight under 18,000 feet at a speed in the range of 200 mph.

If the pilot is flying a high speed jet and wishes to fly above 18,000 feet, he would use the *High Altitude Chart,* which depicts only the jet routes and fewer NAVAIDs.

If the instrument pilot is flying to an airport in a large metropolitan area such as Chicago, Atlanta or Dallas, for example, he may wish to refer to *Area Charts,* which are essentially "blow-ups" of terminal areas. Altogether there are nine metropolitan areas charted in this manner. They are printed 10″ x 10″ on one foldout.

The fourth type of IFR chart, the *Aircraft Position Chart,* is one the average general aviation pilot would never need. This is the means by which high altitude jet pilots navigate across vast bodies of water, in conjunction with radio facilities known as LORAN (Long Range Navigation).

LORAN receivers aboard the aircraft (also used by ships) pick up signals from pairs of land-based LORAN transmitters. These signals, plotted on the Aircraft Position Chart, tell the pilot his exact location.

Approach Charts Handy

Instrument Approach Procedure Charts are not only indispensable for IFR landing approaches, but are also helpful to the VFR pilot landing at an unfamiliar airport. Bound in a handy loose-leaf notebook, measuring 5″ x 8″, Instrument Approach Charts diagram every airport in the country where some kind of instrument landing aid is installed. They depict prescribed instrument approach procedures from a distance of about 25 miles from the airport, and present all related data such as airport elevation, obstructions, NAVAID locations, procedural turns, etc.

Each recommended procedure (and every airport has several) is designed for use with a specific type of electronic navigation aid. The pilot makes his choice depending upon instrumentation in his aircraft and prevailing weather conditions.

To aid pilots on takeoff, a kind of spoken shorthand known as Standard Instrument Departures (SIDs) has been developed.

SIDs eliminate the need for a great deal of oral communication between controllers and departing IFR pilots in certain busy terminal areas where local FAA authorities have felt they were needed to facilitate transition between takeoff and enroute operations. SIDs are also bound in 5″ x 8″ notebooks to be carried aboard the aircraft.

There are 16 different SIDs for JFK International Airport in New York, for example, each with a different code name.

FAA's staff of cartographers is continuously at work making navigation more exact and simpler for pilot and controller alike. Both high and low altitude area navigation routes, developed for off-airway navigation by aircraft with necessary instrumentation, were published in the Airman's Information Manual, Part III, Sept. 4, 1969. Effective Oct. 1, these routes will reduce the large number of aircraft that tend to converge at NAVAIDs on heavily traveled airways. More area navigation routes are coming, and in later stages of the program these will be incorporated into the Instrument Charts.

New Charts

Two other projects presently under evaluation and worthy of note include experimental *Airport Taxi Charts and Selectable Glide Slope Computer Charts.* The experimental Airport Taxi Chart is directed toward improvement of ground control operations by helping transient pilots get from point to point on unfamiliar airports. These charts are simple 5″ x 8″ diagrams of the runways, taxiways and various airport buildings.

The experimental Selectable Glide Slope Computer Charts provide defined steep, segmented approaches to airports as a proposed means of alleviating noise problems associated with landing jet transports.

Regardless of type, the date a chart was issued is vitally important to its user. When charted information becomes obsolete, further use of the chart for navigation may be dangerous. Changes, many of them critical, are occurring constantly and it is important that pilots obtain up-to-date charts.

To insure that only the latest charts are being used, regularly revised lists titled "Dates of Latest Editions" are available on request from the Coast and Geodetic Survey.

In addition, subscribers to the Airman's Information Manual are alerted to changes in the status of facilities and special changes in the airspace by means of NOTAMs and the Sectional Chart Bulletin, compiled from a daily supplement to charts, and published every 28 days. The same information, published in the National Flight Data Digest, is sent to all commercial chart producers.

To receive the monthly chart revision notice, charts, or the free catalog, write to the Distribution Division, C-44, Coast and Geodetic Survey, Rockville, Md. 20852.

To avoid delay in filling orders, charts should be requested by series and number with proper prefix, if any, as indicated in the published catalog. Name and address should be typed or printed.

N. Koplinka

Asked to "ident", small transponder-equipped plane will bloom on the radar screen (arrow) as large as a giant transport.

the equalizer

Transponder Boosts Radar Display of Small Planes

". . . Positive radar identification gear may someday become required equipment, a part of the price of admission to the safe and efficient use of the airways."

The speaker was FAA Administrator John H. Shaffer, and the equipment he was talking about is the airborne transponder of the Air Traffic Control Radar Beacon System, often called secondary radar. Some 10,000 general aviation aircraft are now equipped with this electronic device, and by 1975 nearly half of the civil air fleet is expected to be using it. The advantages it offers are speedier, more positive radar identification and reduced communications load for the pilot as well as for the air traffic controller.

Transponders are not a new invention. The device was introduced about 30 years ago, having been developed in crude form by the British and first used experimentally in 1939 at the Bawdsey Research Station by the British Air Ministry. The transponder is an electronic device installed in an aircraft that responds automatically to a ground-sent radar signal.

Aircraft not equipped with transponders will also "respond"—but passively—to radar signals which are deflected back to the sending station after striking the surface of the airplane. The strength of the "return" or "target" which is displayed on a radar scope may vary according to such factors as distance, size of the aircraft, atmospheric conditions, etc. As a general rule, the smaller the airplane, the less distinctive the radar scope target will be (when there is no transponder).

Equalizing the Target

Transponders eliminate this inequality of presentation, as they provide the controller with relatively equal target size and brilliance regardless of the aircraft size. The target can be depicted as a single slash, a double slash, or as a solid display known as a "bloom."

The advantages of this capability especially for general aviation pilots, are obvious. Not only does the pilot have better assurance that his aircraft will be seen and tracked by air traffic control, but he also has a means of instantly communicating an inflight emergency without a radio call-up. He can select an emergency code on the transponder which will display a distress signal—a target bloom—directly on the radar scope. This emergency code selection will also trigger a visual alert signal on the beacon control panel in the radar room which draws immediate attention of the controller.

Transponders for general aviation aircraft are now available in a price range from about $800 to $5,000. Most of the equipment offers the pilot 4,096 codes, as well as automatic altitude readout. Earlier transponders were limited to 64 codes.

The ground radar system which activates airborne transponders is known as the Air Traffic Control Radar Beacon System. There are currently two modes in civilian use: Mode A, for indentification and tracking,

and Mode C, for automatic pressure altitude transmission. The latter transmits altitude changes in 100-foot increments (to ground stations equipped to handle this information).

The range of this system is up to 200 nautical miles. The elevation limits are from ½ to 45° above the horizontal line. The altitude range is unlimited.

The transponder operation in the cockpit is quite simple. As he goes through his checklist prior to takeoff, the pilot observes that his transponder control is turned to "standby," the non-functioning position. The internal circuitry is checked by operating a test switch. If the flight is to be IFR, the pilot will be given a distinctive code, which he dials into his transponder. This code may be associated with him during his entire flight.

For VFR flight, code 0600 is used when operating below flight level 240; at or above that level, code 0700 is used. Although VFR pilots may not be assigned discrete codes, their transponder set on non-discrete codes gives them additional protection when flying through high density traffic areas. By flipping a switch, the controller can cause all transponder-equipped VFR traffic in his area to show up as double slashes on his radar scope. This will assist him in separating this traffic from IFR aircraft.

Positive Identification

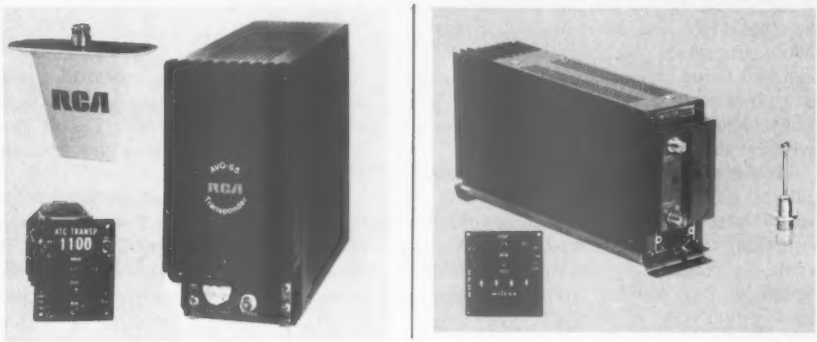
Just before takeoff, the pilot will flip his transponder switch to "on." He may not have occasion to change the code again during the entire course of an uneventful flight. On the other hand, if a radar controller wishes to make a positive identification (of an IFR aircraft) he may ask the pilot to push his identification button, which causes the double slash to bloom. After 15 seconds the bloom fades automatically and the double slash reappears.

On another occasion, when the radar controller may wish to eliminate certain unneeded returns on his scope temporarily, or when approaching aircraft have been sighted by the tower cab, he may ask pilots to "squawk standby"—or turn off his transponder.

If a transponder-equipped pilot has an inflight emergency, he sets his code number at 7700 (or 77, on the 64 code transponder). This causes his radar return to bloom on the scope. On the unlikely chance that his signal is not spotted immediately, a visual alarm is activated in the radar room. Precious seconds are thereby saved in rendering inflight assistance, or in search and rescue activities.

Pilots, incidentally, are cautioned not to dial "through" code 77 or 7700, when tuning in a code, since this inadvertent action may easily trigger an emergency alarm.

Like any mechanical or electronic device, a transponder can fail, generally without the pilot's knowledge. Should this happen, the controller interrogates the pilot, asks him to check his set—is it on, off, on standby, or is the mode correct? Transponders are equipped with circuit test buttons which enable the pilot to check the set. However, there is nothing a pilot can do if the circuitry of the set has failed in flight.



Top—transponder controls (sharp contrast) take up little space on instrument panel. Bottom—two typical general aviation transponder units. Each unit consists of three components: an electronic "black box", which can be located at any point in the aircraft; an instrument panel mounted control unit; and an antenna fin or extension.

As the distance between the airborne transponder and the ground radar station decreases, the target blip on the radar scope tends to enlarge because of the strengthening signal. If the scope becomes overly cluttered, the controller may ask the pilot to press his "low sensitivity" button, which reduces the signal strength.

Altitude Reporting

At the present time, the automatic pressure altitude transmission (Mode C) can be received only at the New York Common IFR Room at JFK Airport and at the Atlanta Tower. These two facilities also are capable of identifying aircraft and retaining identity by means of an alphanumeric readout which tracks with the target on the scope. These two capabilities will be extended to many FAA air traffic radar facilities over the next five to ten years.

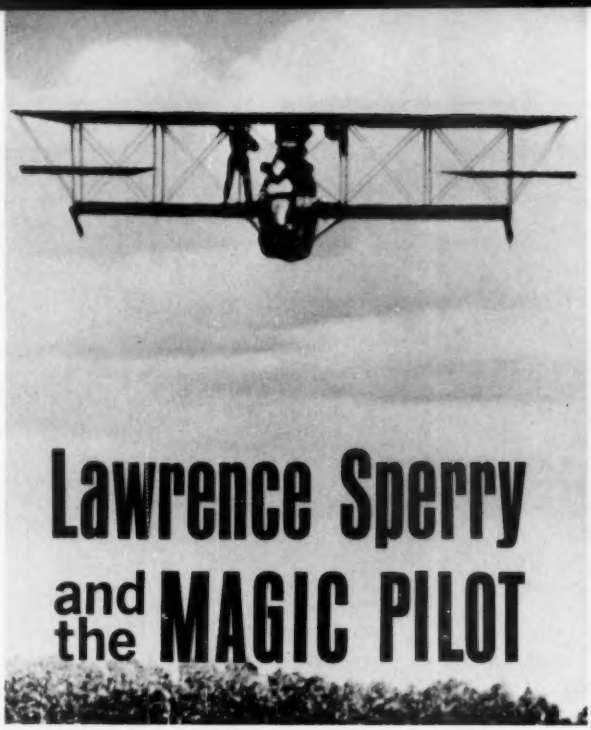
Under a proposed rule, FAA will require radar beacon transponders having 4,096 identification code and automatic altitude reporting capabilities for all aircraft operating in controlled airspace at or above 10,000 feet, and in other designated airspace beginning Jan. 1, 1973.

FAA requires all aircraft operating in positive control airspace to be equipped with at least a 64 code radar beacon transponder. This provides controllers with a positive radar target but may not provide discrete identification or automatic altitude reporting capabilities.

(FAA Advisory Circular AC 00-27, "U. S. National Standard for the Mark X (SIF) Air Traffic Control Radar Beacon System Characteristics (ATCRBS)," and AC 00-26, "Definition of a National Standard," which describes characteristics of military and civil air transponders and compatible ground equipment, are available in limited quantities free of charge from the Dept. of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.) ■

Famous

FLIGHTS



Lawrence Sperry and the MAGIC PILOT

With his mechanic on the wing, Sperry stands in the cockpit, arms aloft in first demonstration of the autopilot, June 18, 1914. After the flight Sperry poses with his mechanic, Emil Cochin.

The crowd lining both sides of the River Seine where it passes through the Bezons district of Paris grew silent in anticipation as the Curtiss hydroplane droned by 400 feet overhead. All eyes were on the little two-place American biplane as it flew upriver in a lazy sweeping arc, piloted by an American with a French mechanic, Emil Cochin on board.

It was June 18, 1914, and the day had lived up to the long-laid plans and expectations of the sponors of the *Concours de la Sécurité en Aéroplane* (Airplane Safety Competition). The crowd was ample, the weather was seasonably warm and the good-humored spectators gasped and sighed like a well-rehearsed chorus as one daring feat of airmanship followed another.

Paris in 1914 had become the air capital of the world, despite the fact that controlled, powered flight was an American invention. While important advances in aircraft design and flying techniques were taking place at a rapid pace in the U. S., England, Germany, and Russia, Paris was the world's aviation showcase.

Thus it was only natural that 22-year-old Lawrence B. Sperry would be in Paris for the Airplane Safety Competition. He had something to demonstrate to the aviation world—a remarkably advanced device designed to free a pilot from the chore of constantly flying his aircraft.

With Sperry at the controls, the light aircraft flew slowly up the river to a point over the assembled throng. Abruptly a figure was seen to emerge from the open cockpit, grasp a strut and step up on the lower wing. It was Sperry's mechanic. The Frenchman moved on to the wing.

Then Lawrence Sperry stood upright in the cockpit, his hands stretched high above his head, his feet obviously away from the rudder pedals. The aircraft continued to fly straight and level.

The mechanic then shifted from the wing to the aft fuselage, toward the tail. Again, there was no change in the aircraft's attitude as it flew leisurely up the river.

The silent crowd erupted in a roar as the full implication of what they had just witnessed took form. They had just seen the first public demonstration of a workable automatic pilot that could accommodate not only the normal buffeting of flight but also gross shifts of the center of gravity.

Sperry did not win the *Grand Prix*, even though his device was far and away the most significant safety innovation demonstrated. For reasons unknown, the judges withdrew the grand prize and awarded Sperry the second prize, 50,000 francs.

The 1914 Sperry automatic pilot depended on four spinning gyros which controlled yaw, pitch and roll. This is the same basic principle governing the operation of modern autopilots.

The idea for a gyro device to stabilize aircraft flight was an off-shoot of ship gyro-stabilizers developed by Lawrence's father, Elmer Sperry, a giant among American inventors. (The seagoing gyros were huge affairs, capable of "forcing" a ship into a reasonably stable attitude, but they proved impractical because of weight, cost and maintenance problems.)

The elder Sperry's preoccupation with the gyro later centered on the compass. The advent of all metal ships created serious reliability problems with magnetic compasses. This was further aggravated by rotating gun turrets with their huge gun barrels which created magnetic chaos each time they were put into action.

Using electrically driven gyros Elmer Sperry developed the first gyrocompass which soon became standard equipment in the Allied navies. It became the heart of ship fire control systems, and it was said that every shot fired by the British in their victory over the Germans at Jutland was directed by a Sperry gyrocompass.

The pioneering work done by Elmer Sperry, Sr., on ship gyros was later to find ready application to aircraft, forming the foundation for reliable instrument flight. Many aircraft gyro instruments owe their beginning to the elder Sperry's nimble mind.

Lawrence Sperry was a chip off the old block, a real-life Tom Swift—at 15 he was driving his own motorcycle from the family home in Brooklyn to Chicago and Boston. Before he was 20, Lawrence designed and built his own plane. He taught himself to fly and was making regular flights when his health failed and the family shipped him to Arizona in 1911 to recuperate.

He did not remain grounded for long. By 1913 he was back on the East Coast and had a job with Glenn Curtiss at Hammondsport, N. Y., where he quickly earned pilot's license No. 11 isued by the Federation Aeronautique Internationale. The elder Sperry, Lawrence and Glenn Curtiss now took another look at the problem of using gyros to stabilize an aircraft.

A momentous decision was made—instead of trying to manhandle the aircraft into stable flight through the sheer muscle of a large gyro (as with ships) smaller gyros would be used to move individual flight controls.

The 1914 Sperry stabilizing apparatus weighed about 100 pounds, about three times the weight of a modern autopilot. Four separate gyros—two horizontal and two vertical, each one of a pair turning in opposite directions—responded to any change in airplane attitude. Two compressed air servo-motors translated impulses from the gyros into motion against the aircraft's aileron, rudder and elevator controls.

When the plane deviated from a predetermined heading or altitude, the gyros, by remaining in their original plane of rotation, would actuate the controls bringing the aircraft back on course.

Contrary to what might have been expected, World War I, which began in August 1914, actually pushed development of the autopilot into the background. The warring nations demanded hardware that could be put to immediate use.

The war years were busy, studded with authentic aviation milestones. During January of 1915, Lawrence Sperry established a record for passenger-carrying in a flying boat. He flew the 60-mile round-trip from Brooklyn Navy Yard to Ossining, N. Y., in one hour and twenty minutes. On September 1, 1916, he made the first night flight in the U. S., flying 50 miles in a Curtiss hydroplane equipped with landing lights. On September 30 he stretched the distance to 80 miles.

In 1917 Lawrence became an ensign in the Navy, where he turned his talents for adapting autopilot mechanisms to controlling an unmanned "aerial torpedo." The craft, designed by the Navy, looked like a crude, square-rigged biplane, and was intended to crash into enemy targets carrying a heavy load of explosives. Lawrence flew many of the test flights, but in an unmanned demonstration before a group of senior Naval officers, the mechanism failed and the plane flew out to sea where it was lost.

An airplane accident in March 1918 led to his hospitalization and eventual separation from the Navy.

Once again his attention was drawn to aircraft instruments. Using a small horizontal gyro, fixed on a lateral axis, the Sperrys developed the first practical turn indicator. No longer would pilots have to depend on an often erratic magnetic compass; the door to all-weather flying was beginning to open.

The turn indicator was later combined with a curved, oil-filled glass tube enclosing a ball which moved in response to the airplanes' banking. This, of course, was the flight indicator, popularly called the "needle and ball" by generations of pilots.

Lawrence Sperry's other firsts include an airplane-dirigible hookup, air-to-air refueling, developments in parachutes, airplanes, and the use of gyros in bombsights.

In 1922, Lawrence Sperry joined Charles L. Lawrence in developing a super-light biplane, the three-cylinder *Messenger* which could truly be called the first general aviation aircraft in the U. S.

In November, 1923, Lawrence Sperry packed his *Messenger* and took ship for Europe on a barnstorming tour to popularize the plane. After a successful showing in England, he took off over the Channel for a tour of Europe on December 13. Enroute his engine failed; he was observed making a successful water landing, and swimming for shore. Unfortunately he drowned in the frigid waters. He was 31.

Despite his youth, Lawrence Sperry spent half of his life in aviation, logging over 3,500 hours aloft. His contributions—especially his "no hands" flight over Paris in 1914—will keep him in the front rank of aviation pioneers.

Frank J. Clifford

BRIEFS

• FAA'S HIGH FLYING NAVAID INSPECTORS are the stars in the agency's new film, "The Inspectors." With an introduction by Gen. James Doolittle, the 16 mm, 27-minute, color film tells the story of the FAA flight crews which log 17 million miles a year checking the accuracy of the navigation facilities along the 250,000 miles of the nation's skyways. The film will be available in late October from the FAA Film Library, Aeronautical Center, P. O. Box 25082, Oklahoma City, Okla. 73125.

• VIVA BAJA. Plans for installing new VHF transceivers at key ground points to assist general aviation aircraft flying in Baja California are being worked out by FAA's Western Region and Mexican Government offficials. Increasing the number of radio communications facilities in Baja California would make for greater flight safety in some of the more remote areas and speed up search and rescue efforts during emergencies.

Tentative plans call for locating VHF transceivers in Baja State Tourist offices at Ensenada, Meling Ranch, Puerto San Quintin, San Felipe, Puertecito, Bahia San Luis Gongaza and Bahia Los Angeles.

• LOW COST DMEs IN THE OFFING? FAA will test two different inexpensive, low-powered, solid state DME systems, including ground stations and antennas, early next year at the agency National Aviation Facilities Experimental Center (NAFEC) near Atlantic City, N. J.

• FAA PUBLICATIONS, 1969, POSTPONED. The new catalog of FAA publications is not expected to be available before December 29, 1969. An order form for individual cost items will appear in FAA AVIATION NEWS for November.

• PIREPS WANTED ON MIGRATORY WATERFOWL. In order to develop more accurate information on the altitude and movement patterns of migratory water birds, pilots are being asked to file PIREPS whenever they encounter flocks of birds. The reports should be filed promptly with flight service stations, giving date, kind of bird, height above ground level, location in relation to nearest city, direction of bird flight, and time of sighting. Bird migration is heaviest between March-May and September-November.

• PRESENT AND FUTURE AIRPORT CAPACITY is the subject of a new FAA report which provides planners with an accurate means to determine the adequacy of existing and future airport designs in coping with the steady growth of air traffic. The report prescribes a method for analyzing airports to determine capabilities in terms of both the movement rates and the aircraft operating costs resulting from the rates of flow of aircraft. "Airport Capacity Handbook" (AD 690 470) is obtainable for $3 from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Va. 22151.

FLIGHT PLANS NEEDED FOR ALL MEXICO, U. S. FLIGHTS

All pilots flying between the U. S. and Mexico are now required to file flight plans and regular radio position reports under an FAA ruling that went into effect September 5.

The rule is aimed at curbing dangerous flying maneuvers associated with smuggling of narcotics, marihuana, and stimulant or depressant drugs between Mexico and the U. S. FAA has reason to believe that pilots engaged in illicit narcotics flights frequently resort to dangerous flying maneuvers to avoid patrol planes or escape radar detection.

Such pilots also operate from unprepared landing areas and often fly in weather conditions beyond their skill or aircraft capability.

Pilots flying aircraft not equipped with two-way radio are required to land at the nearest designated airport of entry into the U. S. and file an arrival notice. Such pilots are also required to file a flight plan prior to departure from Mexican airports, indicating estimated time of departure.

The actual time of departure must be within five minutes of estimated departure. The flight plan also must indicate the time and the point at which the pilot plans to cross the border.

Pilots knowingly engaged in illicit drug transportation into the U. S. not only face action under existing criminal statutes but are also subject to suspension or revocation of their pilot certificates. Such persons would also be denied application for an airman certificate or rating.

When smuggling involves an aircraft owned or leased by an air carrier, a commercial operator, an air travel club, or an air taxi operator, under the rule, the offense could be the basis for revoking or suspending the operating certificate of the owner and lessor, even if the flight is not conducted under that operating certificate.

WW II RELIC RESURRECTED This vintage mobile control tower (left) was gathering rust when O. B. Cox, FAA local co-ordinator, ran across it near Merced, Calif. With the aid of Joe Crotti, California State Director of Aeronautics, and a dozen volunteers, the delapidated tower underwent a complete renovation. Now resplendent in new colors, (right), the tower sees frequent service at fly-ins and other aviation activities at fields with no towers. The exact origin of the tower is shrouded in mystery but the popular belief is that it was hand-made by an Air Force organization and turned over to the city of Merced when unit was deactivated.

New Airport Planning Guide Allows for Growth

Airport managers, operators and others responsible for airport growth and development now have available a new FAA publication to assist them in their long range planning.

Advisory Circular AC 150/5060-3, "Airport Capacity Criteria Used in Long-Range Planning", presents a simplified method developed by FAA to determine approximate annual and hourly IFR and VFR capacities of various runway configurations. The circular contains a table showing 22 runway configurations with four different airplane groupings for each.

A companion circular for more immediate planning covering a five-year period, AC 150/5060-1A, "Airport Capacity Criteria Used in Preparing the National Airport Plan", is also available.

Copies of both of these circulars may be obtained at no cost from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D. C. 20590. Orders should include both title and "AC" designation and a self-addressed mailing label.

Auxiliary Launch Systems Studied

An eight-month laboratory study will be conducted under FAA contract to determine if auxiliary launch systems can be used effectively for takeoffs to reduce aircraft noises.

The contractor, All American Engineering Co., Wilmington, Del., will also study the flight paths of aircraft equipped with auxiliary launch devices, and the use of the devices on STOL transports, jet transports now in use and under development, the proposed supersonic transport, and 1.5 million pound cargo aircraft.

Lightplane Certification Rules Amended by More than 100 Changes

The rules governing type certification of new aircraft weighing 12,500 pounds or less have been amended by more than 100 changes reflecting the growing complexity and sophistication of today's "small" plane.

Applications made after Sept. 14 for type certification of aircraft in this category will be governed by the updated regulations.

The new regulations affect flight characteristics, airframe structure, aircraft systems and powerplants.

The amended standards cover climb, cruise, approach and landing stages of flight, spin recovery, stability characteristics, structural strength of wing members, gust loads on vertical tail surfaces, fail-safe requirements for primary flight controls, emergency exits, turbine engine installation, and standards on tires, brakes and windshields.

NAS "Stage A" Components Ordered

The Federal Aviation Administration recently awarded a $2,983,520 contract to IBM, Gaithersburg, Md., for electronic components for the National Airspace System (NAS) Enroute Stage A system. The system is now being installed at Air Route Traffic Control Centers in New York, Cleveland, Atlanta, Memphis, Salt Lake City, Albuquerque, Miami and Minneapolis.

FAA expects to have all 20 ARTCCs serving the 48 contiguous states fully operational with the semiautomated system by 1973.

Under the contract, IBM will provide 18 flight strip printer control modules, 266 printer control units, 273 printers, and 266 cable assemblies.

CANINE QUESTER The morsel this German Shepherd has in his mouth is not a fowl, but a fragment of an aircraft. The Royal Aircraft Establishment, Farnsborough, England, has experimented with canine crash locaters, who use their nose to track down aircraft after getting a good sniff at a chunk of metal having a distinctive aircraft odor. Unlike their fabled Alpine brethren, these animals carry no reviving spirits.

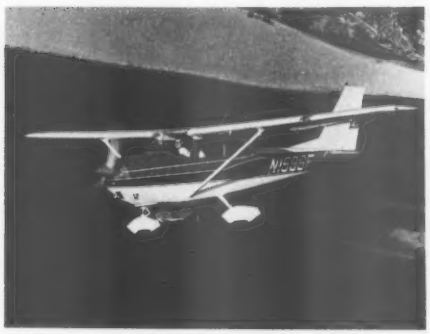
FORUM

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• To Nassau, with Plane

I am a private pilot planning a flight from Ruston, La. to Nassau in a Cessna SKYHAWK. I would like to have information on regulations, restrictions, shots, customs procedures, survival equipment required, passport etc.

John D. Studdiford
Ruston, La.



Special Federal Aviation Regulation 15, contained in Part 3 of the AIM, explains specific requirements and restrictions on flights in and out of Florida, and flights from the Bahamas to Florida. A flight plan to and from Florida must be filed, giving a plus or minus five minute estimate when the aircraft will penetrate the ADIZ (Air Defense Identification Zones). Specific details, including the latest NOTAMS and the most advantageous time for the over-water flight are available from the Miami International Flight Service Station, Miami International Airport.

There is a $2.00 landing fee at MIA but none at Nassau. Customs is open 24 hours a day at MIA but closes at two other ports of entry, Ft. Lauderdale and West Palm Beach. While FARs do not require over-water survival gear it is wise to carry some kind of flotation equipment. This can be rented at modest fees.

A two-way radio is required; the frequency for the over-water trip is 126.7 MHz. No passports or immunization shots are required for the island flight.

• FAR-sighted

Will my present subscription to the Federal Aviation Regulations terminate when the volumes are available? Will the revisions continue indefinitely, or will there be a cutoff date to purchase these volumes without loss of subscription services?

The Government Printing Office announcement does not specify whether or not you must buy FARs by volume to continue receiving FAR revisions.

W. A. Machauer
Kendall Park, N. J.

• FARs (Cont.)

Pilots have always been encouraged to purchase certain FARs. Part 91, for example, should be owned by all fliers. But to get Part 91 under the new system, a pilot must buy Volume VI which will also contain Parts 93, 99, 101, 103, and 105.

I think this is unnecessary and detrimental to safety in flight because it will be both expensive and much of the material will be useless to any particular purchaser.

I suggest thought be given to grouping volumes, if volumes there must be, in terms of subject matter rather than numerical order.

Rex C. Neaverson
Trinity College
Hartford, Conn.

Your subscription to individual FAR Parts will expire as these Parts are incorporated into Volumes. As this occurs, you will be notified automatically by the Superintendent of Documents. For a fuller explanation, your attention is invited to page 6 of this issue.

In grouping the separate FARs into a volume structure, primary consideration was given to logical arrangement of subject matter and user interest. Every effort was made to provide a volume that would result in the least expense to the user and the widest appeal to the aviation community.

Adoption of the volume system enables FAA and the Government Printing Office to improve service and effect savings to the taxpayer.

• Number, please

Clarification is in order concerning the item about FAA's new aircraft "N" number system which appeared in the April FAA Aviation News.

The use of a second suffix letter will increase the existing supply of 339,975 *number-letter* combinations to 915,399.

Previously, a second suffix letter was assigned only upon special request. For example, only the person holding indentification number N100A could apply for and receive N100AB. Short identification numbers consisting of one to three symbols continue to be reserved for FAA-owned aircraft or for aircraft which are too small to accommodate a larger number.

Mark Weaver
FAA Aeronautical Center
Oklahoma City, Okla.

• Anti NAFI

The article "NAFI Flight Instructors Go Professional" in the November 1968 FAA AVIATION NEWS seems to imply that not all professional flight instructors follow the code of the National Association of Flight Instructors.

I believe printing such an article is a disservice to those of us, and there are many, who are full-time instructors and dedicated to training good and safe pilots.

Redwood City, Calif.

The article did not intend to suggest any lack of high standards among professional instructors. Its purpose was to bring the newly-organized National Association of Flight Instructors to the attention of new or part-time instructors, who might benefit from it. The NAFI code of ethics is simply a public pledge to promote flight safety through excellence in training.

• Gold Seals

Your statement on the awarding of a gold seal and a certificate to a flight instructor (FAA AVIATION NEWS, July, 1969) who has completed an instructor refresher course may be misleading.

The certificate which may be presented by the course sponsor should not be confused with the FAA Flight Instructor Certificate, which can be issued or renewed only by an FAA inspector.

Furthermore, attendance at a refresher course is only one of the requirements for a Gold Seal. The applicant must also have: (1) a Commercial Pilot Certificate with instrument rating (as well as Flight Instructor), and (2) a Ground Instructor Certificate with Advanced or Instrument Ground Instructor rating. He must also satisfy specific FAA requirements for training and/or testing pilot applicants.

Full details are in FAA Advisory Circular 61-46, available without charge from the FAA/DOT Distribution Unit, TAD-484.3, 800 Independence Ave., S.W., Washington, D.C. 20590.

Flight Standards Service

• Breezy Builder

I am interested in building an aircraft like *Breezy* which appeared on the cover of the April *FAA Aviation News*. This is my idea of a real airplane.

Where can I get plans, specifications, and possibly, photographs?

ADCM S. J. Tinnerell
U. S. Coast Guard Air Station
San Francisco, Calif.

The Breezy Corp., 8748 South 82nd Court Street, Hickory Hills, Ill. 60457, offers complete plans, specifications and photos for $25.00. An information packet containing general information, photos and a plan view can be had for $1.50

• Finds Needle in Haystack

Since my recent letter telling of the many replies I received after my letter asking for a photo of a Fairchild 24 appeared in the May *FAA Aviation News*, I received several more, plus a phone call I must tell you about.

The call came from a man in Greenville, Texas, who said he knew a man in Oklahoma City who owns a Fairchild 24 and he was sure that I could get a picture of the plane. I told him that by now I had a good selection of pictures, but I would be interested in a picture of the Fairchild 24 which I used to take my daughter for a flight.

The caller from Texas said that the plane in Oklahoma City had a low number, like the one I flew, but he couldn't recall for sure what it was. The next day I phoned the man in Oklahoma City and lo and behold, the number on his "24" is NC 32. It was the same plane I was searching for! He sent me a picture of the aircraft soon after.

FAA Aviation News helped me find a needle in a haystack. Many thanks.

W. K. McFall
Fort Worth, Texas

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RETURN AFTER 5 DAYS

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"A couple of drinks can do no harm"

But on takeoff he bought the farm

Suggested by Larry C. Larkin
Tulsa FSS, Tulsa, Okla.